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Appln. No.: 10/780,947
Amendment Dated February 14, 2006
Reply to Office Action of September 30, 2005

Remarks/Arguments:

In the application, claims 1-13 are presently pending. Claims 12 and 13 are added by this amendment. Basis for these claims may be found in the specification at paragraphs 0037 and 0038.

Claim Rejections Under 35 U.S.C. § 103(a):

Claims 1-11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Baier et al. (E.P. Patent No. DE10003928) in view of Harms (U.S. Patent No. 6,422,533). Applicants respectfully traverse the rejection of these claims and respectfully submit that these claims are patentable over Baier et al. and Harms for the reasons set forth below.

In particular, neither Baier et al., Harms nor their combination discloses "a stop located on a surface of the electromagnet which is closest to the plate or on the plate," as required by claim 1. In the Office Action, it is conceded that Baier et al. do not disclose a stop. Furthermore, Baier et al. do not need a stop because, as described below, they describe other ways to prevent latching. In the Office Action, Harms is relied upon as teaching the use of the stops. In Harms, however, the stops are not located on a surface of the electromagnet closest to the plate or on the plate.

In claim 1 of the subject application, the electromagnet is described as comprising "a magnet in a magnetic circuit." In Harms, this limitation is met by items 44 and 46, which are described by Harms as being "tubular magnets." It is noted, however, that the stops 60 and 62 are not located on the tubular magnets 44 and 46. Thus, they are not located on the electromagnet as required by claim 1. Furthermore, Harms does not disclose or suggest a "mobile magnetic plate." Accordingly, the stops can not be on this plate.

In Harms, the stops are located between the magnets 44 and 46 and the respective pole pieces 50 and 52. As shown in Fig. 2 of Harms, the stops 60 and 62 are located on the side of the bore 20, adjacent to the pole pieces. The magnets 44 and 46 fit snugly within the bore and are effectively stopped by the stops. In Baier et al., however, the plate 8 does not fit snugly within any bore. Indeed, item 50 which surrounds the moving plate 8 does not appear to be described by Baier et al. From the Fig. 1, however, it is noted that item 50 defines a wall that is separated from the sides of the plate 8 by a gap. As described below, there is no motivation

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to combine Baier et al. and Harms except in Applicants' own specification. If a skilled person, however, with hindsight gained from the subject application, were to combine Baier et al. and Harms, he or she would place the stops against the item 50. This, however, does not conform to the subject application because the stops are not placed "on the surface of the electromagnet closest to the plate or on the plate." They are not closest to the plate because, if they were moved away from the gap they would be closer to the plate. Accordingly, even if Baier et al. and Harms could be combined, the result would not be the claimed invention. Furthermore, because there would be a gap between the surrounding member 50 and the plate 8, the stops would be subject to wear and would fail in normal usage. Thus, the skilled person would not combine Harms and Baier et al. to produce the claimed invention.

Applicants respectfully submit that the only motivation to combine these references comes from Applicant's disclosure. It is well settled that it is improper to use Applicant's disclosure against them in this manner.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure.* (emphasis added)¹

Harms teaches "a method of improving solenoid valve performance [that] includes suppressing or **counteracting at least a portion of the effects of parasitic magnetic flux**" [emphasis added] (Column 1, Lines 31-36). More specifically, Harms discloses pole pieces 50 and 52 that are located at opposite respective ends of the armature 24. Air gaps 56 and 58 are defined between an armature 24 and the respective pole pieces 50 and 52. "Energizing one of the coils 28 and 30 causes movement of the armature 24 to reduce or close the respective air gap 56, 58 within the energized coil. Respective mechanical stops 60 and 62 are provided in the air gaps 56 and 58 to prevent contact between the magnets 44 and 46 in the respective pole pieces 50 and 52. Such contact between magnet and pole piece results in **latching**, a condition wherein the armature 24 is firmly coupled to a pole piece. **Latching is generally undesirable** since a large force may be required to unlatch a latched armature and pole piece."

¹ MPEP §706.02(j)

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that is positioned between two pole pieces 50 and 52" [emphasis added] (Column 2, Line 59 to Column 3, Line 4).

The Baier et al. reference also discloses solutions to reduce parasitic magnetic flux in a solenoid. More specifically, "Baier discloses permanent magnets (27a, 27b, 28a, 28b) that **act against** the electromagnets drawing the armature into the end positions" (Abstract). The armature is positioned between the end positions when the spring mechanism is in its balanced state, as illustrated in Figure 1. Furthermore, one or more gaps are formed on the surface of the electromagnet (6, 7) and/or the armature (8) to reduce the surface contact area between the electromagnet (6, 7) and the armature (8) to thereby reduce or eliminate parasitic magnetic flux as well as latching. Thus, Baier et al. already describe a method for preventing latching and do not need any other method or device to do so.

Therefore, there would be no motivation to modify the device of Baier et al. by adding the mechanical stop taught in the Harms reference, because the Baier et al. invention also proscribes latching. *Prima facie* obviousness is not properly established by combining features found in prior art references based only on the roadmap provided by Applicants' invention. Hindsight reconstruction of Applicants' claimed invention is impermissible in the absence of a credible suggestion to do so. The only such suggestion impermissibly comes from Applicant's own disclosure. As described above, it is improper to use Applicant's disclosure against them in this manner.

Accordingly, because there is no suggestion to combine the Baier et al. and Harms references, *prima facie* obviousness cannot be established based on the cited references. Reconsideration of claims 1-11 is respectfully requested.

Furthermore, neither Baier et al., Harms nor their combination discloses or suggests that the stop is located essentially in the center of the contact surface between the electromagnet and the plate as required by claim 2. In Harms, the stops are located at the edges of either the magnets or the pole pieces. Harms does not disclose or suggest stops located essentially in the center of the contact surface between the electromagnet and the plate. Accordingly, for reasons independent of claim 1, claim 2 is not subject to rejection under 35 U.S.C. § 103(a) in view of Baier et al and Harms.

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In addition, claim 5 requires that the electromagnet comprise an E-shaped magnetic circuit and that the stop be located at an end of one of three essentially parallel branches that for the E-shaped magnetic circuit. Again, this limitation is missing from both Baier et al and Harms. In Baier et al., the electromagnet is in two pieces, separated by a shaft guide 21. Thus, Baier et al. do not disclose an E-shaped electromagnet as required by claim 5. Accordingly, claim 5 is not subject to rejection under 35 U.S.C. § 103(a) in view of Baier et al and Harms for reasons independent of claim 1.

Claims 1-4 and 9-11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Piaccabrino et al. (Patent No. FR2784497A1) in view of Harms (U.S. Patent No. 6,422,533). Applicants respectfully traverse the rejection of these claims and respectfully submit that these claims are patentable over Piaccabrino et al. and Harms for the reasons set forth below.

Applicants respectfully submit that there is no motivation to combine these references. Piaccabrino teaches an electromagnetic actuator configured to reduce noise. According to Piaccabrino, means are provided in order that extreme positions of the mobile plate are reached with a low speed. Applicants direct Examiner's attention to the following passages of the patent application of Piaccabrino: "... *tels que les positions extrêmes recherchées soient atteintes mais que la palette arrive dans ces positions à une vitesse faible, pour réduire les bruits et l'usure*" [Emphasis added] (Page 1, Line 31 to Page 2, Line 4). Thus, Piaccabrino already teaches a solution to limit noise and parasitic magnetic flux.

Therefore, there would be no motivation to modify Piaccabrino's invention by adding the mechanical stop taught in the Harms reference, as Piaccabrino's invention already presents a solution to limit parasitic magnetic flux. As set forth above, *Prima facie* obviousness is not properly established by combining features found in prior art references based only on the roadmap provided by Applicants' invention. Hindsight reconstruction of Applicants' claimed invention is impermissible in the absence of a credible suggestion to do so.

Accordingly, because there is no suggestion to combine the Piaccabrino and Harms references, *prima facie* obviousness cannot be established based on the cited references. Reconsideration of claims 1-4 and 9-11 is respectfully requested.

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In addition, Piccabrino does not provide the material that is missing from Harms regarding claim 2. Accordingly, claim 2 is not subject to rejection under 35 U.S.C. § 103(a) in view of Harms and Piccabrino for reasons independent of claim 1.

Claims 1, 3, 9, 10 and 11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Pischinger et al. (U.S. Patent No. 4,515,343) in view of Patel (U.S. Patent No. 4,533,890). Applicants respectfully traverse the rejection of these claims and respectfully submit that these claims are patentable over Pischinger et al. and Patel for the reasons set forth below.

Independent claims 1 and 11 recite a limitation which is neither disclosed nor suggested by Pischinger or Patel, alone or in combination, namely "at least one stop being located on a surface of the electromagnet which is the closest to the plate or on the plate."

The Examiner contends that the coil cover 5, 6 is a stop to limit contact between the armature 17 and the electromagnet 1. Applicants respectfully disagree and submit that the coil cover 5, 6 is not a stop. Figure 1 clearly illustrates that the coil covers 5, 6 are not positioned to act as stops, i.e., the coil covers are located in the same plane (i.e. flush) with the electromagnets 1, 2 and are not positioned to be in contact with the armature 17. In other words, neither of the coil covers 5, 6 extends beyond the plane of the electromagnet 1, 2 to act as a stop for the armature 17. Indeed, if the coil covers were intended to act as a stop, they would not be positioned flush with the plane of the electromagnets 1 and 2. In this position, repeated use would wear out the covers, exposing the wires of the coil to the magnetic plate. The skilled person would immediately recognize that this would be undesirable. Thus, modifying Pischinger et al. to allow the coil covers to act as stops would render the device described by Pischinger et al. inoperable. Thus, the skilled person would not combine Pischinger et al. with Patel.

Patel also fails to disclose or suggest a stop located on a surface of the electromagnet which is the closest to a plate or on the plate. As stated in the previous response, each stop in the Patel reference is recessed away from the surface of the electromagnet closest to the plate.

Accordingly, because claims 1 and 11 includes limitations that are neither disclosed nor suggested by Pischinger or Patel, alone or in combination, prima facie obviousness cannot be established based on the cited references. Claims 3, 9 and 10 are dependent upon claim 1, and

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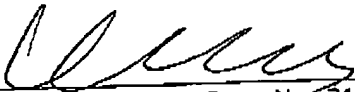
therefore should also be allowed at least as dependent upon an allowable base claim.
Reconsideration of claims 1, 3, 9, 10 and 11 is respectfully requested.

Newly Added claims 12 and 13 add features that are neither disclosed nor suggested by the prior art. Claim 12 requires that the stops be made from a magnetic material. The stops in Harms are explicitly defined as being made of non-magnetic material (see col. 3, lines 7-10). None of the other references discloses or suggests that are made from a magnetic material. Accordingly, claim 12 is not subject to rejection in view of the cited references either alone or in combination. Claim 13 recites that the stops are made from an elastomeric material. None of the references discloses or suggests such stops. Accordingly, claim 13 is not subject to rejection in view of the cited references either alone or in combination.

Conclusion

In view of the foregoing remarks, Applicants request that the Examiner reconsider and withdraw the rejection of claims 1-11 and that the Examiner allow newly added claims 12 and 13.

Respectfully submitted,


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